

## JOB SHEET 171

# Wheel Bearing (Serviceable Type) Inspection and Service

Name: \_\_\_\_\_ Station: \_\_\_\_\_ Date: \_\_\_\_\_

### NATEF Correlation

This Job Sheet addresses the following NATEF task(s):

- 5.F.1** Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine necessary action. (P-1)
- 5.F.2** Remove, clean, inspect, repack, and install wheel bearings and replace seals; install hub and adjust bearings. (P-1)
- 5.F.6** Replace wheel bearing and race. (P-2)
- 4.D.2** Remove, inspect, and service or replace front- and rear-wheel bearings. (P-1)

### Performance Objective(s)

Upon completion of this Job Sheet, you will be able to properly inspect, diagnose, and test the driveability concerns and noises related to wheel bearings. You will also be able to properly remove, service, and install wheel bearings (serviceable type).

### Tools and Materials

Service manual  
Technician's tool set  
Wheel bearing packer  
Wheel bearing grease  
Seal remover  
Seal driver  
Parts washer  
Dust cap remover  
Slide hammer  
New cotter pin set

### Protective Clothing/Equipment

Goggles or safety glasses with side shields

Describe the vehicle being worked on:

Year	Make	Model	VIN	Engine type and size

**PROCEDURE**

1. Describe the noise that a bad wheel bearing will make during a test-drive.

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2. Test-drive the vehicle in an open parking lot. Does the vehicle make any bearing-related noise while going in a straight direction only?

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3. Make several low-speed turns in both directions. Does the vehicle make any bearing-related noises while turning?

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4. Does the bearing noise seem to get louder when turning one way or another?

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5. Can you isolate if the noise is coming from the front or rear?

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6. Bring the vehicle back to the shop and hoist it up in the air. Based on your test-drive experience, can you determine a bad wheel bearing?

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7. With the tires off the ground turn each wheel by hand. Listen and feel for the wheel bearing.

**Task Completed** \_\_\_\_\_

8. Rock the tire back and forth to check for looseness or play. Use the manufacturer's service manual as a guide. Is this looseness normal?

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9. Remove the wheels and check for signs of seal leakage.

**Task Completed** \_\_\_\_\_

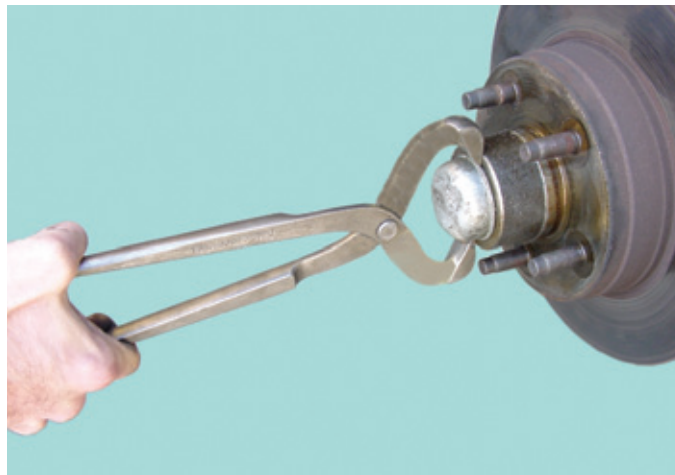
**Note:** Steps 10–15 are for removing, inspecting, and repacking a wheel bearing assembly. Steps 16–20 are for removing, inspecting, and replacing a sealed hub/bearing assembly.

10. Remove the disc brake caliper and hand it to the side.

**Task Completed** \_\_\_\_\_

- 11.** Using the dust cap pliers, remove the dust cap. It is usually recommended to replace the dust cap. Match the old one with the new one if available.

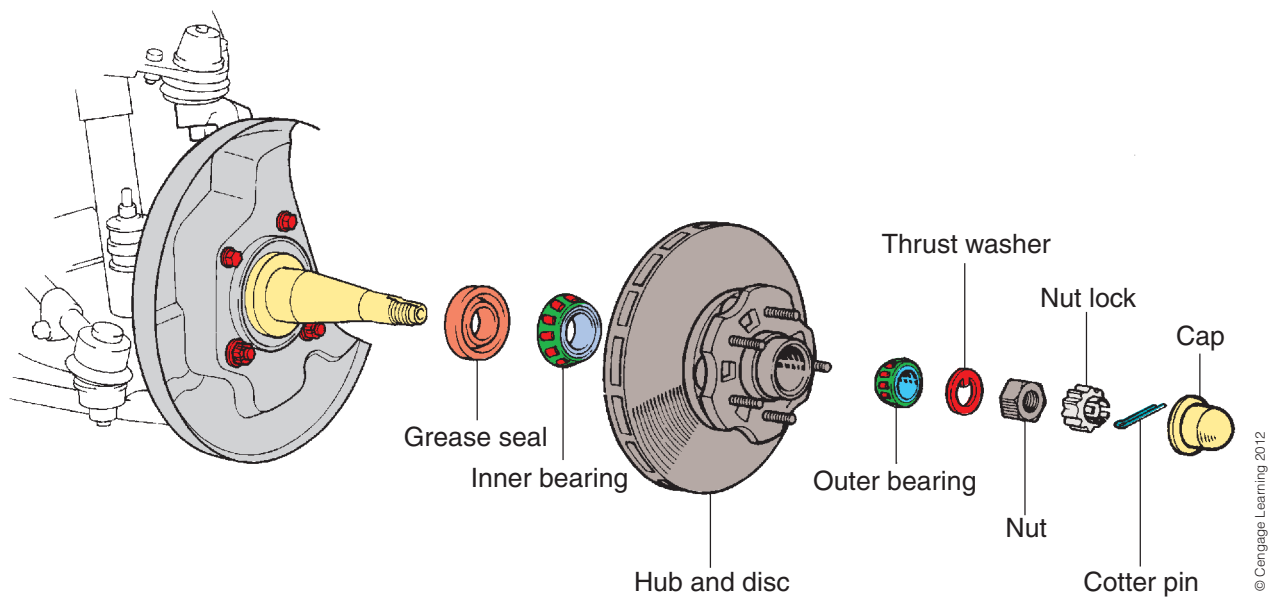
Task Completed \_\_\_\_\_



**Figure 60.36** A special tool used for removing a wheel bearing dust cap.

- 12.** Remove the cotter pin nut thrust washer and outer bearing. Place the parts in order on a clean shop towel or bench.

Task Completed \_\_\_\_\_



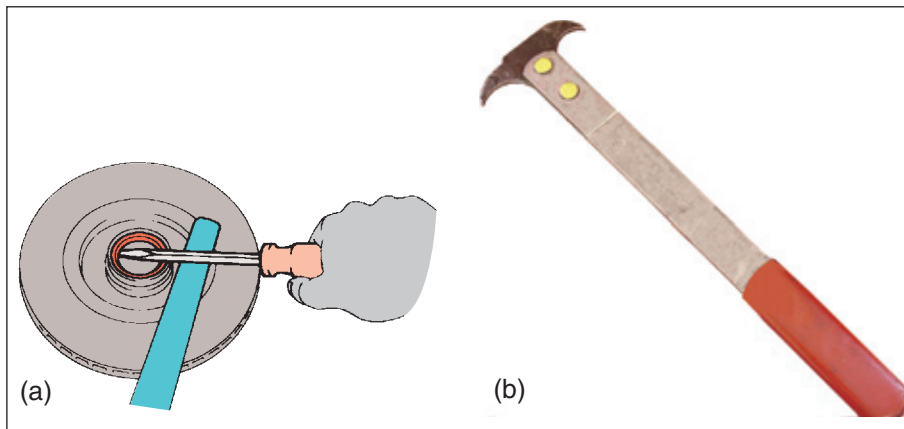
**Figure 60.33** Parts of the wheel bearing assembly.

- 13.** Remove the rotor and hub assembly. Place the hub on the bench with the inside facing up.

Task Completed \_\_\_\_\_

14. Using the seal remover (or a flat screwdriver and a prybar) remove the inner oil seal.

Task Completed \_\_\_\_\_



**Figure 60.43** (a) Using a screwdriver to remove a bearing. (b) A seal removal tool.

15. Remove the inner bearing.

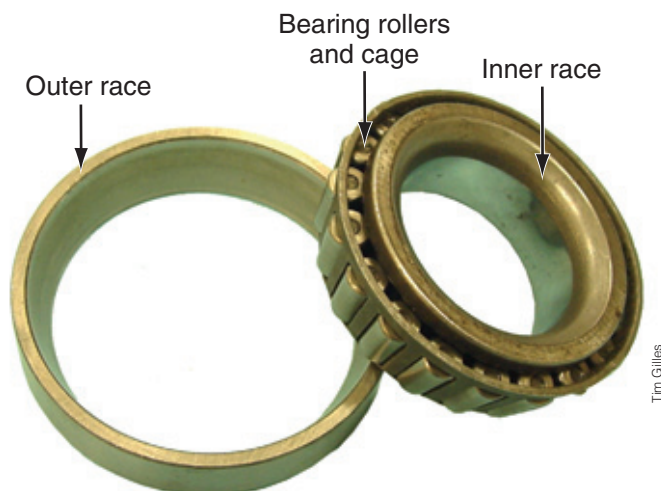
Task Completed \_\_\_\_\_

16. Clean the bearings and the hub with a parts washer. Dry the parts using low-pressure compressed air.

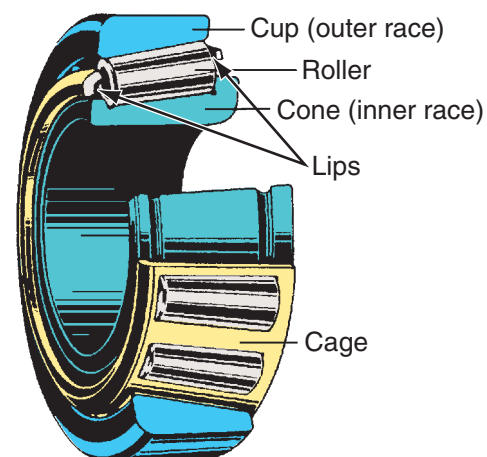
Task Completed \_\_\_\_\_

**Note:** Do not use compressed air to “spin” the bearings to dry them.

17. Inspect the bearing rollers; cage; and races for pitting, corrosion, spalling, brinelling, signs of overloading, and signs of overheating. Describe how the bearings look.



**Figure 60.15** Tapered roller bearing construction.



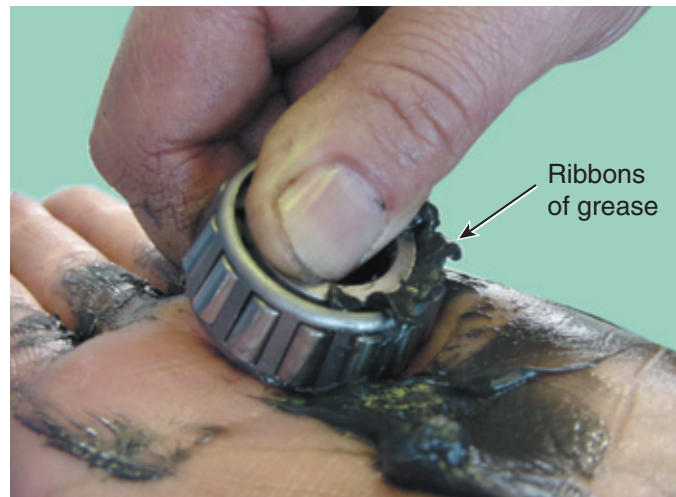
**Figure 60.16** A tapered roller bearing has lips on the inside and outside edges of the inner bearing race.

18. Based on your inspection, should the bearings be replaced?

19. Place the old bearings (or new bearings if required) in the bearing grease repacker. Insert new grease into the bearing repacker until grease starts to come out of the bearing. Coat the outside of the bearing with grease and reinsert it into the race.

**Note:** If you do not have a bearing repacker, force grease into the wheel bearing by holding a large amount of grease in one hand, then using your other hand to move the bearing into it.

Task Completed \_\_\_\_\_

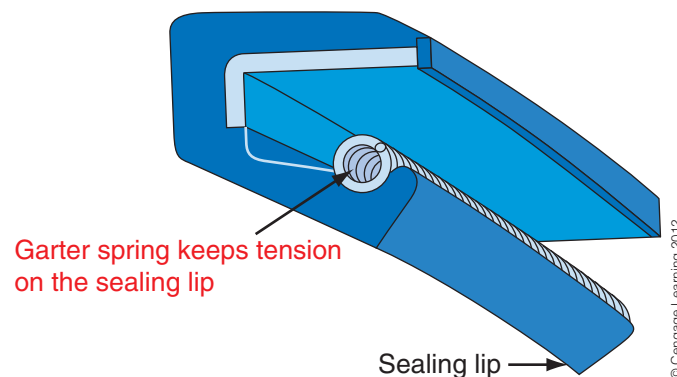


**Figure 60.51** Apply grease until ribbons of grease start to appear at the opposite ends of the bearing.

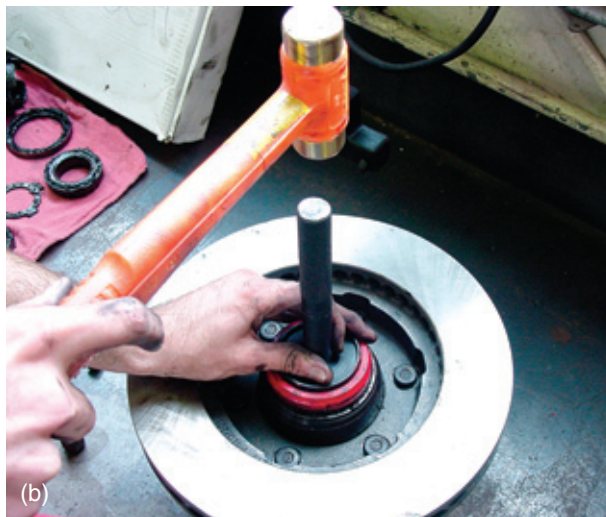
20. Reinstall the new inner seal using the proper adapter with the open side of the sealing lip facing the lubricant.

**Note:** The seal should be flush with the top of the bore.

Task Completed \_\_\_\_\_



**Figure 60.28** A lip seal.



Tim Gilles

**Figure 60.56** (a) Select the correct adapter and position the seal over its bore. (b) Pound the seal flush with the top of the bore.

**21.** Clean and check the spindle for damage. What did you find?



Sealing area

Tim Gilles

**Figure 60.54** Clean the sealing area on the spindle so that the new seal is not accidentally ruined.

22. Install the rotor, outer bearing, washer, and nut.

Task Completed \_\_\_\_\_

23. With the wheel rotating, tighten the adjusting nut to the manufacturer's specification (use 17–25 lb-ft. of torque if no specification is available).

Task Completed \_\_\_\_\_

24. Why is this preload needed?

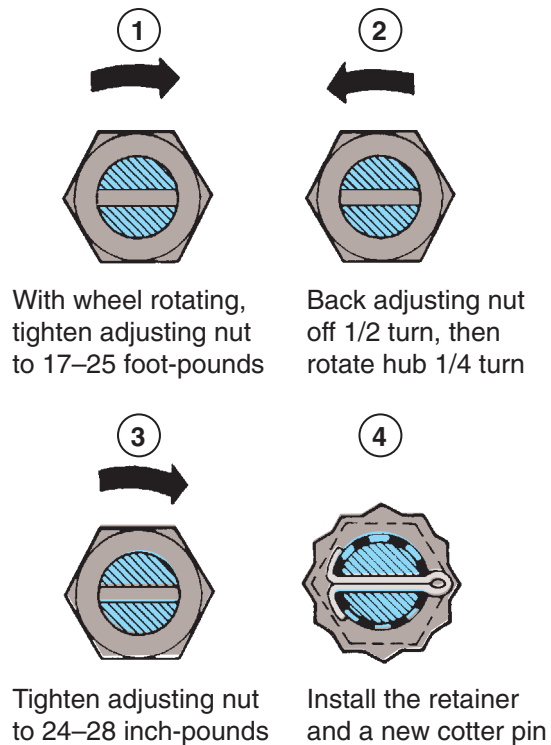
\_\_\_\_\_

25. Back the adjusting nut off  $\frac{1}{2}$  turn, the rotate the hub  $\frac{1}{4}$  turn.

Task Completed \_\_\_\_\_

26. Tighten the adjusting nut to the second torque specification (use 24–28 in.-lb if no specification is available).

Task Completed \_\_\_\_\_

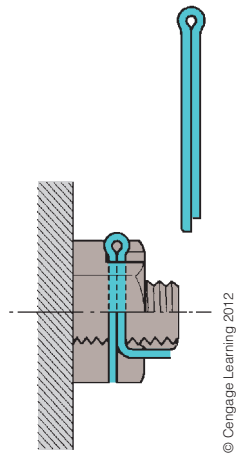


**Figure 60.35** Typical wheel bearing adjustment directions.



27. Install the retainer and a new cotter pin.

Task Completed \_\_\_\_\_



**Figure 60.39** Cotter pin installation.



Right



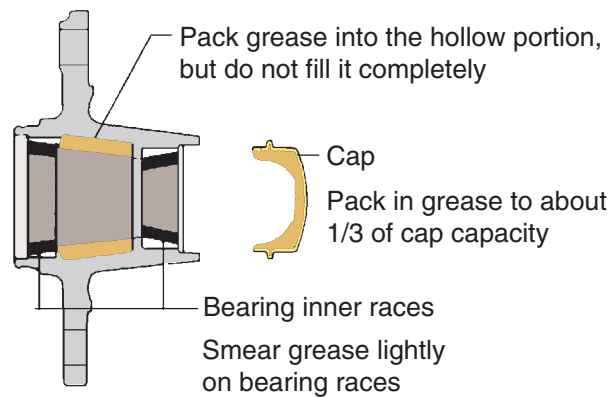
Wrong

**Figure 60.40** The right (a) and wrong (b) ways to install a cotter pin.



28. Pack the dust cap about  $\frac{1}{3}$  full of grease. Pack grease into the hollow portion of the hub, but do not fill it completely.

Task Completed \_\_\_\_\_



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**Figure 60.53** Partly fill the hub with grease.

29. Reinstall the wheel. Torque it to specifications.

Task Completed \_\_\_\_\_

### Problems Encountered

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### INSTRUCTOR EVALUATION

- ☐ 4 Mastered Task
- ☐ 3 Able to Perform Task Independently; Some Additional Training Suggested
- ☐ 2 Able to Perform Task with Close Supervision; Requires Additional Training
- ☐ 1 Unable to Perform Task
- ☐ 0 Not Attempted

### Comments

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Instructor Name: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor Signature: \_\_\_\_\_